Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-16 and 26-28 are pending in the application, with claims 1, 10, 11, and 26 being the independent claims. New claims 26-28 are sought to be added. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 102

Claim 10 has been rejected under 35 U.S.C. § 102(b) as being anticipated by the article "Physical and Technological Features of the Arc Vacuum System for Coatings Deposition Based on the Plasma Arc Accelerator" to Semenyuk *et al.* ("Semenyuk"). The Examiner states that Semenyuk discloses all the features of this claim.

Claim 10, based on the above amendment, now calls for a macroparticle filter included in the cathode arc source. Semenyuk fails to disclose this feature. Accordingly, as Semenyuk does not teach each and every feature of claim 10, Semenyuk does not anticipate claim 10. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 10.

Additionally, as previously stated in an Amendment and Reply submitted February 21, 2003, the Semenyuk device is designed to produce a decreased generation of macroparticles. As stated in the article conclusions, "[v]arying the intensity and

energy of the additional ion flow (by means of varying the discharge current and voltage) it is possible, as experiments had shown, to maintain such cathode film condition when the film already provides the additional increase the electric field near the cathode surface, but still do not lead to the generation of the solid fragments owing to the film break. See Semenyuk p. 875, §3 "Conclusions", para. 2. Accordingly, one skilled in the art would not be motivated to include a macroparticle filter as it would not be necessary to do so.

Further, Semenyuk teaches away from using macroparticle filters because they decrease the output ion current causing a substantial decrease in the efficiency of the process. See Semenyuk page 871, col. 2, lines 12-20. Additionally, the Semenyuk device will not function when used with a filter bend because the strong magnetic field created by the filter bend will make the source unstable. When the point of zero field strength is located at the surface of the target as disclosed by Semenyuk, use of a filter bend will suffocate and suppress the plasma, resulting in a significantly reduced output.

Finally, in response to the above arguments, the Examiner stated that "there is no clear motivation for modifying the apparatus of Semenyuk with a macroparticle filter. See May 2, 2003 Office Action (paper no. 24), p. 11, lines 12-14.

Rejections under 35 U.S.C. § 103

Claims 1-9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Semenyuk in view of U.S. Patent No. 5,468,363 to Falabella ("Falabella"). The Examiner states that Semenyuk teaches substantially all the features of these claims except for using a graphite cathode source, with respect to claim 1, and the particular

field strengths, with respect to claims 3-8. The Examiner then relies on Falabella for the teaching of a graphite cathode source and states that a graphite cathode source in cathode arc deposition is well known in the art. Further, the Examiner states that the motivation for combining Semenyuk and Falabella is the desire to deposit carbon films onto the substrate. Finally, the Examiner states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Semenyuk by selecting the cathode to be a particular material, in the instant case, graphite, because selection of a preferred material would have been an obvious design choice dependent upon the requisite coating to be applied to the substrate.

Claim 1, based on the above amendment, now calls for a macroparticle filter included in the cathode arc source. Semenyuk fails to disclose this feature. Additionally, as discussed above with respect to claim 10, there is no motivation for modifying the apparatus of Semenyuk to include a macroparticle filter. Accordingly, Semenyuk alone or in combination with the art of record fails to disclose all the features of the present invention and also fails to disclose the motivation for combining the art of record to disclose all the features of the present invention. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 1.

Claims 2-9 depend from and add additional features to claim 1 and are therefore allowable at least for the reasons set forth above with respect to claim 1. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 2-9.

Other Matters

New claims 26-28 are drawn to a method of depositing carbon ions from a cathode target onto a substrate in a vacuum chamber. The Examiner stated previously that none of the prior art discloses the features of this claim. See May 2, 2003 Office Action (paper no. 24), p. 10, lines 14-20. Additionally, the Examiner stated that because such a claim is drawn to a method, the manner of generating the magnetic field and location of the zero field are features which are significant to the process of operation and thus accorded patentable weight. Therefore, none of the art of record appears to teach, suggest or render obvious such a magnetic field arrangement. See May 2, 2003 Office Action (paper no. 24), p. 11, lines 1-6. Accordingly, Applicants respectfully request that claims 26-28 be allowed.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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